UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

August Technology Corporation, and
Rudolph Technologies, Inc.,

Plaintiffs,

v.

MEMORANDUM OPINION
AND ORDER
Civil No. 05-1396

Camtek, Ltd.,

Defendant.

Douglas J. Williams, Ernest W. Grumbles III, Rachel Zimmerman, Rebecca A. Bortolotti and Joseph E. Lee, Merchant & Gould P.C. for and on behalf of Plaintiffs.

Michael Florey, Ann Cathcart Chaplin, David Francescani, Edmond R. Bannon, John D. Garretson and Michael F. Autuoro, Fish & Richardson P.C. for and on behalf of Defendant.

This matter is before the Court for a Markman Hearing to construe claims in U.S. Patent No. 6,826,298 ("the '6,298 patent"), which describes an "automated wafer defect inspection system and a process of performing such inspection."

Background

The inventions of the '6,298 patent were developed by a Minnesota corporation, August Technology Corporation ("August Technology"). Rudolph Technologies, Inc. ("Rudolph") purchased August Technology, and Rudolph and August Technology are now co-owners of the '6,298 patent. Plaintiffs make and sell automated visual inspection systems for the microelectronics industry, including systems for secondary inspection of semiconductor wafers.

Defendant Camtek, Ltd. ("Camtek") is a multinational company that competes directly with Plaintiffs in the secondary wafer inspection market. Plaintiffs allege that Camtek's Falcon 200, 300, 500 and 800 series wafer inspection machines infringe claims 1-5 of the '6,298 patent.

1. Brief description of wafer fabrication

Integrated circuits are structures that are made up of layers. The first step is a silicon crystal that is sawed into thin layers, or wafers. These wafers are then polished, and covered with a layer of insulating silicon oxide. Next, the wafer is covered with a film material that is sensitive to light.

To create a pattern on the bare wafer, UV-light is shown through a mask onto the wafer. The mask acts like a stencil, such that the pattern on the mask is

imprinted on the protective material by virtue of the UV-light. The wafer is then developed, rinsed and baked, and is then put through a series of steps called etching, doping and diffusion. Metal is added to connect the components to each other in a process called metallization, followed by additional layers of metals that are patterned using photoresist. A final coating can be applied for further protection. The final result is a wafer having several independent and identical integrated circuits, referred to as chips or die. The chips or die are separated with a saw or scribing device.

Testing of the wafer at this point is referred to as secondary inspection. Plaintiffs assert that prior to its invention, inspection of the wafers was done manually or by systems that required frequent stopping. These methods were slow and subject to error due to stress, eye fatigue and other similar factors. Plaintiffs' earlier systems required frequent stopping to capture images, and this slowed the inspection process. Plaintiffs developed the '6,298 patent and its commercial embodiments to speed up the process, as well as to provide an accurate inspection system.

The '6,298 patent includes five claims, 1 and 3 being independent claims.

1. An automated system for inspecting a substrate such as a wafer in any

form including whole patterned wafers, sawn wafers, broken wafers, and wafers of any kind of film frames, dies, die in gel paks, die in waffle paks, multi-chip modules often called MCMs, JEDEC trays, Auer boats, and other wafer and die package configurations for defects, the system comprising:

> a wafer test plate;
> a wafer provider for providing a wafer to the test plate;
> a visual inspection device for visual inputting of a plurality of known good quality wafers during training and for visual inspection of other unknown quality wafers during inspection;
> at least one of a brightfield illuminator positioned approximately above, and a darkfield laser positioned approximately about the periphery of the wafer test place, all of which are for providing illumination to the unknown quality wafers during inspection and at least one of which strobes to provide short pulses of light during movement of a wafer under inspection based on a velocity of the wafer; and
> a microprocessor having processing and memory capabilities for developing a model of good quality wafer and comparing unknown quality wafers to the model.

2. The automated system of claim 1 wherein the visual inspection device visually inputs a plurality of pixels from both the known good quality wafers and the unknown quality wafers in a continuous scan.

3. An automated method of inspecting a semiconductor wafer in any form including whole patterned wafers, sawn wafers, broken wafers, and wafers of any kind of film frames, dies, die in gel paks, die in waffle paks, multi-chip modules often called MCMs, JEDEC trays, Auer boats, and other wafer and die package configurations for defects, the system comprising:

> training a model as to parameters of a good wafer via optical viewing of multiple known good wafers;

illuminating unknown quality wafers using at least one of a brightfield illuminator positioned approximately above, and a darkfield laser positioned approximately about the periphery of the wafer test place on which the wafer is inspected, all of which are for providing illumination to the unknown quality wafers during inspection and at least one of which flashes on and off during movement of a wafer under inspection at a sequence correlating to a velocity of the wafer; and
inspecting unknown quality wafers using the model.

4. The automated method of claim 3 wherein the inspecting step includes continuous scanning of the wafer.

5. The automated method of claim 3 wherein the optical viewing step includes continuous scanning of the wafer.

Markman Hearing - Claim Construction

The parties have identified eleven terms to be construed by the Court: 1) wafer; 2) plurality of known good quality wafers/multiple known good wafers; 3) unknown quality wafers; 4) wafer test plate; 5) strobes to provide short pulses of light during movement of wafer under inspection based on a velocity of wafer; 6) flashes on and off during movement of a wafer under inspection at a sequence correlating to a velocity of the wafer; 7) training; 8) inspection; 9) automated; 10) wafer provider for providing a wafer to the test plate; and 11) continuous scanning.

Standard

Claim construction is a question of law. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) aff'd, 517 U.S. 370 (1996)(citation omitted). To ascertain the meaning of claims, the Court begins its analysis by focusing on the words of the claims themselves. "It is a 'bedrock principle' of patent law that 'the claims of the patent define the invention to which the patentee is entitled the right to exclude.'" Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005)(listing cases). Words in a claim are generally given their ordinary and customary meaning. Id. at 1313. The ordinary and customary meaning of a claim term is that which would be understood by a person of ordinary skill in the art in question at the time of the invention. Id.

> It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed. Such person is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning and usage in the field. The inventor's words that are used to describe the invention – must be understood and interpreted by the court as they would be understood and interpreted by a person in that field of technology. Thus the court starts the decisionmaking process by reviewing the same resources as would that persona, viz. the patent specification and the prosecution history.

Id. (quoting Multiform Desiccants, Inc. v. Medzam, Ltd., 133 F.3d 1473, 1477 (Fed.

Cir. 1998)).

The specification is a written description of the invention, which description is to be "clear and complete enough to enable those of ordinary skill in the art to make and use it." Vitronics Corp. v. Conceptronic Inc., 90 F.3d 1573, 1576 (Fed. Cir. 1996). "The specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." Id. The Court must keep in mind, however, that the "specification itself does not delimit the right to exclude. That is the function and purpose of the claims." Markman, 52 F.3d at 980. Nonetheless, claims must be read in view of the specification. Phillips, 415 F.3d at 1315.

> Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

Id. (quoting Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1249 (Fed. Cir. 1998)).

There may be cases in which the ordinary and customary meaning of claim language as understood by one skilled in the art is readily apparent, and claim construction simply involves application of the widely accepted meaning. In

such cases, general dictionaries may be helpful. Id, at 1314. When the ordinary and customary meaning of claim language is not readily apparent, however, the Court must look to "those sources available to the public that show what a person of a skill in the art would have understood disputed claim language to mean." Id. (citation omitted). Such sources include the words of the claims themselves, the specification, the prosecution history and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art. Id.

As with the specification, the prosecution history can be used to understand the claim, but it cannot enlarge, diminish or vary the limitations in the claim. Markman, at 980. Similarly, extrinsic evidence cannot be used to vary or contradict the terms of the claims. Id. at 981.

Analysis

1. Wafer

Plaintiffs' Proposed Construction: A thin slice of semiconductor material with circuitry thereon that is ready for electrical testing, or any part thereof.

Defendant's Proposed Construction: A thin semiconductor slice on which

matrices of microcircuits can be fabricated, or which can be cut into individual dice for fabricating single transistors and diodes.

Plaintiffs assert its construction is supported by the patentee's definition. The claimed invention is directed to the secondary inspection, at which point the circuits have been completed upon the wafer. '6,298 patent, Col. 3: 36-37; 42-46. By contrast, a wafer that does not have electrical circuitry on it is referred to as a "bare whole wafer". Col. 1: 65; Col. 2: 9. Plaintiffs further assert there is a second aspect to defining "wafer" which relates to the form of a fully processed wafer, and that such form includes whole wafers and sawn wafers. Col 1: 18; Col. 5; Col. 6: 39-44.

Camtek asserts its construction of wafer represents the ordinary and customary meaning of wafer and that this definition is consistent with the specification, and is confirmed by reference to the prosecution history. Camtek asserts that consistent with this definition, the specification describes a "whole wafer with circuitry on them." Col. 1: 67 - 2: 1. As such, limiting "wafer" to include only wafers with circuitry on them improperly reads limitations into the claims. Finally, Camtek asserts that the specification establishes that the term is not limited to fully processed wafers.

> It is further an objective of the present invention to provide an automated defect inspection system that is specifically intended and designed for second optical wafer inspection **although useful in other levels of optical inspection as level 1.5.**

Col. 3: 43-47 (emphasis added).

The Court finds that the '6,298 is directed to "second optical wafer inspection". Col. 1: 21-22; Col. 3: 9-30. The reference to second optical wafer inspection refers to that step in the process after which the circuitry has been placed on the wafers. Col. 2: 24, 30-46. Accordingly, in this context, wafer should be construed as having circuitry thereon. This is consistent with Plaintiffs' proposed construction.

The reference to the optical inspection of level 1.5, referred to by Camtek, is also consistent with Plaintiffs' proposed construction because the specification defines "level 1.5" as follows: "[o]nce the whole wafers are at least fully deposited on, that is all of the circuitry is created thereon, a post 1st (or 1.5) inspection occurs". Col. 2: 23-25.

The Court further finds that wafer should be construed to include a part of a wafer. Throughout the patent, reference is made to wafers, in whole or in part. For example, the preamble to claims 1 and 3 reference a system for inspecting

"whole patterned wafers, sawn wafers, broken wafers and wafers of any kind ..."

Camtek asserts that if the Court were to construe wafer to include "any portion of a wafer", the Court would be giving the same meaning to the terms "wafer" and "die". The Court disagrees. A "die" is defined in the specification as a *piece* of a whole wafer with circuitry after it is sawn. Col. 1: 67-2:1 (emphasis added). In fact, the parties don't dispute that a die represents a single microchip. A wafer, on the other hand, is made of up multiple die, as is a portion of a wafer. Thus, Plaintiffs' construction of wafer does not provide the same meaning as die - the former refers to plural, while the latter refers to single. Accordingly, the Court will adopt Plaintiffs' construction of wafer, as it is fully supported by the claim language and the specification of the '6,298 patent.

2. Plurality of known good quality wafers/multiple known good wafers

Plaintiffs' Proposed Construction: Multiple 'wafers' that are recognized individually or as a whole to be sufficiently free of defects for training purposes (e.g. die that have been inspected, tested or otherwise reviewed prior to or during training).

Camtek's Proposed Construction: Multiple wafers . . . known not to have defects.

In reading the parties' submissions, it is clear that the only dispute with respect to this claim term is the meaning of "known good quality wafer." The specification describes a "good die" as one not having defects but may have acceptable process variations. Col. 12: 67-Col. 13: 4. The specification goes on to state that the system conducts die inspection by studying a user provided set of known good die. Col. 12: 13-15. Given the recognition that "defect" may include process variations in the specification, and that the definition of a good die depends on user provided information, the Court will adopt Plaintiffs' proposed construction.

3. Unknown quality wafers

Plaintiffs' Proposed Construction: Wafers for which the location of one or more defects is not identified or ascertained prior to inspection.

Camtek's Proposed Construction: Unknown whether wafers have defects.

Plaintiffs assert its construction is supported by the specification, which teaches:

> [i]nspection parameters are also set to indicate how close an unknown quality die must match specific characteristics of the 'good die' model to be considered a good die. These include sensitivity parameters and defect filters. Col. 19: 32-37.

The result of such comparison is a defect map showing the location of defects on each die, and that defects that were once unknown are identified or ascertained after inspection.

Camtek responds that the Court should construe this term using the ordinary and plain meaning of the words - that it is unknown whether the wafer has defects. This construction is consistent with the specification and does not improperly impose extraneous limitations - that is the "location" of defects that "are not identified or ascertained prior to inspection".

The Court finds that the specification and the claim language clearly contemplate that an "unknown quality wafer" is a wafer that has not yet been inspected, therefore it is unknown whether the wafer has defects. Accordingly, construing this term to include a reference to "prior to inspection" is proper. However, construing this term to include a reference to the "location" of defects does impose an extraneous limitation, as it presupposes that a defect will be located. The portion of the specification cited by Plaintiffs addresses one step in the inspection process, but was not intended as a definition of the term "unknown quality wafer." Accordingly, the Court adopts the following construction: "Wafers for which the location of one or more defects, if any, is not

identified or ascertained prior to inspection."

4. Wafer test plate

Plaintiffs Proposed Construction: A plate for holding a thin slice of semiconductor material with circuitry thereon that is ready for electrical testing, or any part thereof, during training and inspection.

Camtek's Proposed Construction: Term should be given its ordinary meaning.

Plaintiffs argue its construction is used by one skilled in the art and that it incorporates the special definition of "wafer". An exemplary wafer test plate is shown in Figure 14, reference numeral 12.

Camtek asserts this term need not be construed, as it is clear to one of ordinary skill in the art.

The Court will construe this term consistent with Plaintiffs' proposed construction, as it is consistent with the Court's construction of "wafer" and supported Figure 14 in the specification.

5. Strobes to provide short pulses of light during movement of a wafer under inspection based on a velocity of the wafer.

Plaintiffs' Proposed Construction: When the illuminator strobes depends,

in part, on the rate of change of the position of the wafer such that the illuminator freezes the patterns of the moving wafer onto the visual inspection device.

Defendant's Proposed Construction: Strobes . . . based on the speed of the wafer, not the position of the wafer.

Plaintiffs assert that the '6,298 patent is directed to an inspection system that allows for the inspection of a wafer in motion. To collect the image of a wafer without stopping the system, the patterns on the wafer must be frozen onto the camera. This is done through strobing. Col. 17: 57-62. Thus, the timing of the strobing relates to the velocity of the moving wafer. Plaintiffs further assert that "velocity" includes aspects of both time and position - a definition that is consistent with technical dictionaries. Lee Decl. Ex. K[1], Ex. L.[2] Thus, the claim language "strobing . . . based on velocity" means that strobing is based on aspects of both time and position.

Camtek argues this construction is needlessly complex and improperly

[1]"Time of rate of change of position of a body; it is a vector quantity having direction as well as magnitude. Also known as linear velocity." MCGRAW-HILL DICT. OF SCIENTIFIC & TECHNICAL TERMS 2020 (4th ed. 1989).

[2]"Rate of change of position." DICT. OF COMP. VISION & IMAGE PROC. 321 (2005).

expands the scope of the claims. In claim 1, the patentees chose the term "based on" to set the metes and bounds of the patent rights, yet Plaintiffs now attempt to change it to "depends in part". Through Plaintiffs' proposed construction, strobing not based on velocity would be captured, such as strobing based on a position.

Contrary to Camtek's position, Plaintiffs' construction would not allow strobing based solely on position, or some other factor. The dictionary definition of "based" is "a main ingredient . . . a supporting or carrying ingredient . . the fundamental part of something". MERRIAM-WEBSTER'S COLLEGIATE DICT. (10th ed. 1999). "Based" does not mean the only ingredient, or the only part. Thus, "based" and "depends in part" are entirely consistent terms. Furthermore, Plaintiffs' proposed construction "rate of change of position" is entirely consistent with the technical definitions of "velocity" referred to above.

Camtek further asserts that during the prosecution history of the '6,298 patent, Plaintiffs argued its claims were distinguishable from the Sandland prior art, because Sandland did not teach strobing based on velocity. Autuoro Decl. Ex. B, p. 19. Camtek asserts that as Sandland was a position based system, Plaintiffs' essentially disclaimed strobing based on position.

The doctrine of prosecution disclaimer "preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution." Omega Eng'g, Inc. v. Raytek Corp., 334 F.3d 1314, 1323 (Fed. Cir. 2003). The Federal Circuit has "declined to apply the doctrine of prosecution disclaimer where the alleged disavowal of claim scope is ambiguous." Id.

With respect to the patent at issue here, the examiner had rejected claims 1 and 3 as being anticipated by Sandland. Id. p. 30. In response, Plaintiffs filed amendments to claim 1 and 3 and argued that Sandland did not "teach or suggest a light source that strobes to provide short pulses of light during movement of a wafer under inspection based on velocity of the wafer." Id. p. 39. Plaintiffs further argued Sandland did not teach or suggest strobing, or strobing during movement of the wafer. Id. With respect to claim 3, Plaintiffs again argued Sandland does not teach or suggest strobing or flashing, or strobing or flashing during movement of the wafer under inspection. Id. p. 40.

The Court finds that Plaintiffs did not disclaim strobing based on position. Rather, the focus of Plaintiffs' responses to the examiner's finding was on "strobing" and "flashing", not on the relationship of strobing or flashing to position. In any event, this record does not establish that Plaintiffs clearly and

unambiguously disclaimed "strobing based on position." Accordingly, based on the intrinsic evidence, the Court adopts Plaintiffs' proposed construction.

6. Flashes on and off during movement of a wafer under inspection at a sequence correlating to a velocity of the wafer.

Plaintiffs' Proposed Construction: When the illuminator flashes on and off relates to the rate of change of position of the 'wafer', such that the illuminator freezes the patterns of the moving 'wafer' onto the visual inspection device.

Defendant's Proposed Construction: Flashes . . . based on the speed of the wafer, not the position of the wafer.

Plaintiffs assert that like the strobing term, this term incorporates aspects of both time and position through the use of velocity, but that this term uses 'correlates' rather than 'based on'. Because the claims use different words, the words must be given different meanings. See eg., Curtiss-Wright Flow Control Corp. v. Velan, Inc., 438 F.3d 1374, 1381 (Fed. Cir. 2006) (doctrine of claim differentiation recognizes that different words used in different claims should be given different meanings). "Correlate" should be given its ordinary meaning "to have a mutual or reciprocal relation" - thus claim 3 requires that the flashing on

and off of the illuminator has a relationship to the velocity of the wafer.

Camtek argues this term should not be differentiated from the "strobes . . . based on velocity" term, as the two terms were treated equally by the applicants to distinguish the Sandland prior art. Thus, Camtek argues that this term should also be construed to mean "strobes based on the speed of the wafer, not the position of the wafer."

Based on the doctrine of claim differentiation, the Court agrees that "based on" and "correlates" must be given different meanings. Furthermore, as discussed above, Plaintiffs' did not disclaim during the prosecution of the '6,298 patent strobing or flashing based on position. The Court will thus adopt Plaintiffs' construction of this term.

7. Training

Plaintiff's Proposed Construction: Examining wafers to develop a model by which to locate defects.

Defendant's Proposed Construction: Development of a model of a good quality wafer.

Plaintiffs assert its construction incorporates the special definition provided in the specification, which refers to training as telling the system what a

"good die" comprises, and viewing good die to form a model based on common characteristics, elements and ranges. Col. 12: 63-65; Col. 7: 20-25. The model is then used to inspect die to locate defects. Col. 16: 22-25 ("The step C7 is simultaneous with step C6 and involves determining where defects are located on the given die being viewed based upon the "good die" model of step A3. . .").

Camtek argues "training" should be construed to mean only "development of a model of a good quality wafer". Camtek argues that Plaintiffs' construction requires the importation of "by which to locate defects", and that this creates ambiguity as to whether training would necessitate the actual location of defects. The Court agrees.

The specification only defines training as telling the system what a "good die" comprises. See eg., Col. 12: 63-65; Col. 7: 20-25. Plaintiffs reliance on the step in which the model is used to inspect die to locate defects is a step separate from training, and need not be used to define training. Accordingly, the Court will adopt the following construction: "Examining wafers to develop a model of a good quality wafer."

8. Inspection

Plaintiffs' Proposed Construction: Examining wafers to locate one or

more defects.

Camtek's Proposed Construction: Examining wafers for defects.

Camtek argues that Plaintiffs' construction again presupposes that defects are found during inspection. The Court agrees. The following construction will be adopted "Examining wafers to locate one or more defects, if any."

9. Automated

Plaintiffs' Proposed Construction: The system must work with little or no human actuation.

Camtek's Proposed Construction: Term does not need construction.

The term "automated" is included in the preamble of all claims. Plaintiffs assert that this term is limiting, and should be construed to limit the claimed invention as automated - a system requiring little or no human actuation.

"Whether to treat a preamble as a limitation is a determination . . . 'resolved only on review of the entire[] . . . patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim.'" Catalina Marketing Int'l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed. Cir. 2002). To aid in this determination, the Federal Circuit has provided some guidelines.

> In general, a preamble limits the invention if it recites essential structure or steps, or if it is "necessary to give life, meaning and vitality to the claim." (citation omitted). Conversely, a preamble is not limiting "where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.

Plaintiffs argue the term "automated" as used in the preamble is limiting because it distinguishes an automatic system from a manual one. By reviewing the "Background of the Invention" section in the specification, there is discussion concerning the previous problems with "manual" systems and that the objective of the '6,298 patent is to overcome these problems through an automated system.

Camtek argues that "automated" as used in the preamble is not limiting. The term is not needed to give life, meaning and vitality to a claim, and the claim body describes a structurally complete invention. Camtek further points out that the specification provides that certain elements of the invention need not be automatic. For example, in the specification, the inventor informs that the means for providing a wafer to the test plate can be either manual, where the user puts the wafer on the test plate by hand, or automatic, through the use of a robotic arm. Id., Col. 8; 57-64. Camtek further points out that in describing an earlier Wafer Inspection System, the NSX-80, Plaintiffs described said system as an

"Automated Wafer Defect Inspection System", that has "manual or robotic wafer loading [] available." Autuoro Decl., Ex. L.

Given the claim language, read in light of the specification, the Court finds that "automated" should be construed as limiting the claims. The specification makes clear that the main objective of the invention is to provide "an automated inspection system that replaces the current manual inspection process." Col. 3: 33-36. While the claim language for the most part provides for a structurally complete invention, "automated" is nonetheless needed to give life and meaning to the claims since the objective of the '6,298 patent is to provide an "automated" inspection system. Furthermore, "automated" shall be construed consistent with its ordinary meaning: "working of itself, with little or no direct human actuation." NEW SHORTER OXFORD ENGLISH DICT. 152 (1993).

10. Wafer provider for providing a wafer to the test plate

Plaintiffs' Proposed Construction: This term should be construed as a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6, and that the term means "the recited function is providing a 'wafer' to the 'test plate.' The corresponding structure is a robotic arm and automated equivalents thereto."

Camtek's Proposed Construction: Not a means-plus-function limitation and should be given its ordinary meaning.

A means-plus-function limitation is defined as "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. § 112, ¶ 6.

Whether certain claim limitations invoke 35 U.S.C. § 112, ¶ 6 is a question of law. Use of the word "means" in a claim creates a strong presumption that the limitation was intended to convey a means-plus-function limitation under § 112. Lighting World, Inc. v. Birchwood Lighting, Inc. 382 F.3d 1354, 1358 (Fed. Cir. 2004). "The presumption that a limitation lacking the term 'means' is not subject to section 112 ¶ 6 can be overcome if it is demonstrated that "the claim term fails to 'recite sufficiently definite structure' or else recites 'function without reciting sufficient structure for performing that function.'" Id. (citations omitted). "[T]he presumption flowing from the absence of the term "means" is a strong one that is not readily overcome." Id. (citations omitted).

Plaintiffs argue the claimed function is providing a wafer to the test plate, and that the claim language does not provide sufficient structure. The claim term should thus be construed as a means-plus-function claim, and that the structure in the specification corresponding to the wafer provider is a robotic arm. Col. 8: 57-67; 15: 61-66; and Col. 19 43-55. Figure 17, reference number 14. A person of ordinary skill in the art would understand that a wafer provider corresponds to the robotic arm or an automated equivalent thereof.

The Court agrees that "wafer provider for providing a wafer to the test plate" should be construed as a means-plus-function limitation. Although the claim language does not include the word "means", the claim merely recites a function without reciting sufficient structure for performing that function.

In determining whether a claim provides sufficient structure, it is important to determine "whether the term is one that is understood to describe a structure, as opposed to a term that is simply a nonce word or a verbal construct that is not recognized as the name of a structure and is simply a substitute for the term means for." Lighting World, 382 F.3d at 1360. The court may look to the dictionary definition of the term to determine if such term "has achieved recognition as a noun denoting structure, even if the noun is derived from the

function performed." Id. For example, in Lighting World, the Federal Circuit held that "connector" "has a reasonably well-understood meaning as a name for structure, even though the structure is defined in terms of the function it performs." Id.

In this case, the disputed term is "wafer provider". Wafer has already been construed, so the disputed term for purposes of the means-plus-function test is "provider." This word is defined as "one who provides". MERRIAM-WEBSTER'S COLLEGIATE DICT. 940 (10th ed. 1999). "Provides" is defined as "to supply or make available". Id. In the context of the claims at issue, therefore, wafer provider denotes only a function, not a structure to perform such function. The reference in the specification, that a wafer could be placed on the test plate either manually or by automatic means, is further support for the finding that the claim denotes only a function, and not a structure.

Because the claim is a mean-plus-function limitation, the Court must ascertain the corresponding structures in the written description that performs such function. Omega Eng'g, 334 F.3d at 1322. The specification provides that

> in the automatic environment, the wafer providing means 14 includes a robotic arm that pivots from a first position where a wafer W is initially grasped from a magazine or cassette to a second position where the wafer

W is positioned on the wafer test plate 12 for inspection.

Col. 8: 57-67; Fig. 17.

Accordingly, the Court will construe this term as a means-plus-function claim, and that the corresponding structure is a robotic arm and automated equivalents thereto.

11. Continuous Scanning

Plaintiffs' Proposed Construction: Uninterrupted collection of images of the patterns on the wafer.

Camtek's Proposed Construction: Continuously moving the plate during scanning.

Plaintiffs assert that this term relates to the collection of images by the visual inspection device. Col. 16:11-12; 21: 13-16; 22: 17-19.

Camtek proposes the term be construed as "continuously moving the plate during scanning." See Col. 17:56-62; Col. 20: 15-22.

In the portion of the specification describing the preferred embodiment, "continuously scanning" is defined as follows:

> collecting an image of the wafer W using the camera by continuously moving the plate 12 so as to scan over all of the die on the wafer whereby the wafer is illuminated by a strobe light at a sequence correlating to the

> speed of the moving plate so that each die is strobed at the precise time it is under the camera. This allows for the continuous collecting of images without necessitating the stop and go procedure of aligning the camera with a first die, viewing and recording that die, moving the plate to align the camera with another die. Col. 8: 9-18.

With respect to another embodiment, the step of "continuously scanning" is described as:

> collecting an image of the wafer W using the camera by continuously moving the plate 12 so as to scan over all of the die on the wafer whereby the wafer is illuminated by a strobe light at a sequence correlating to the speed of the moving plate so that each die is strobed at the precise time it is under the camera. Col. 17: 57-63.

As the above language indicates, "continuously scan" relates to both the collection of images and the moving of the plate. Accordingly, the Court will construe this term as follows: "Uninterrupted collection of images of the patterns on the wafer, by continuously moving the plate."

For the reasons stated, **IT IS HEREBY ORDERED**:

The claims of the patents at issue in this case should be construed in a manner consistent with the definitions set forth by the Court in this Memorandum Opinion and Order.

Date: January 2, 2007

s / Michael J. Davis
Michael J. Davis
United States District Court